REMARKS

Claims 1-28 are presently active in this case.

In the outstanding Official Action, Claims 19-22 and 26-28 were withdrawn from consideration as being directed to a nonelected invention; Claims 1-9, 11-18, and 23-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,980,458 to Clark in view of U.S. Patent No. 5,833,613 to Averkiou et al.; and Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark and Averkiou et al., and further in view of the publication "Simultaneous Optical and Acoustical Observations of Contrast Agents" authored by Dayton et al.

First, Applicants wish to thank Examiner Jung and Primary Examiner Jaworski for the September 25, 2003 personal interview, at which time the outstanding issues in this case were discussed. During the interview, Applicants presented arguments substantially as indicated in this Response. While no formal agreement was reached, the Examiners indicated that the arguments presented show that the primary reference to Clark does not teach the claim limitations for which Clark was cited in the outstanding Official Action.

Turning now to the merits, Applicants' invention is directed to an improved ultrasound diagnostic apparatus suited for a contrast echo method using an ultrasound contrast agent mainly composed of microbubbles. As described in the Background of the Invention section of Applicants' specification, the invention provides an ultrasound scanning method and apparatus in consideration of the fact the microbubbles rapidly shrink and collapse upon reception of strong ultrasound waves. Specifically, Applicants' Claim 1 recites an ultrasound diagnostic apparatus having a transmission reception control circuit configured to control transmission and reception circuits to change the number of parallel reception during a scan sequence for generating a one-frame ultrasound image. That is, as discussed in the September 25 personal interview, Claim 1 is directed to changing the number of receiving

scanning lines from one transmission by parallel simultaneous reception during a scan. Claim 23 covers a similar feature in method claim format

Applicants' Claim 6 recites an ultrasound diagnostic apparatus including an image processing unit configured to generate one ultrasound image by using reception line data in a short distance region and long distance region, generated on the basis of transmission of a first ultrasound signal, reception line data in a short distance region, generated on the basis of the first ultrasound transmission, and reception line data in the long distance region, generated on the basis of the second ultrasound transmission. Thus, as discussed in the September 25 interview, Claim 6 is directed to setting a number of parallel simultaneous reception to, for example, 4, in a short distance region and setting the number to, for example 2, in a long distance region, as shown in exemplary Figure 5 of Applicants' specification. Claim 23 includes a similar feature in method claim format.

Claim 7 recites an ultrasound diagnostic apparatus including a transmission circuit configured to drive a probe to transmit an ultrasound wave while sequentially changing a direction of an ultrasound transmission line and drive the probe such that the ultrasound transmission lines are formed into a plurality of sets each constituted by a plurality of adjacent transmission lines. Also recited is that scanning is performed with respect to the plurality of sets on a forward direction and scanning is performed in a reverse direction in each of the sets. Thus, as discussed in the September 25 interview, Claim 7 is directed to pairing scanning lines, and the pairs of scanning lines being sequentially scanned in the order of the first direction while two scanning lines in each pair are sequentially scanned in the order of the second direction opposite to the first direction as exemplified in the sequence shown in Figure 7b of Applicants' specification. Claim 25 covers a similar feature in claim format.

Finally, Claim 9 recites an ultrasound diagnostic apparatus including a transmission\reception control circuit configured to control the transmission and reception circuits to scan a plurality of local regions within a scan slice in different transmission conditions. That is, Claim 9 is directed to changing a part of the transmission conditions in the scanning surface as shown in exemplary Figure 10.

In contrast, as discussed in the September 25th interview, contrary to the position taken in the outstanding Official Action, the primary reference to Clark does not teach the above-noted features of Applicant's independent claims. First, the primary reference to Clark is directed to averaging variations in signal intensities in the lateral direction (azimuth direction). Thus, Clark is entirely different than the present invention, which is mainly aimed at averaging signal intensities in the depth direction. In addition, the outstanding Official Action indicates that Claims 1-9, 11-18 and 23-25 are disclosed in Clark at column 8, lines 13-43 and column 9, lines 33-60. However, this section of Clark merely describes two or four line simultaneous reception without regard to the specific features of the claimed invention as described above.

Specifically, the cited portion of Clark does not disclose changing the number of simultaneous receptions as claimed in Claims 1 and 23. Further, with respect to Claims 6 and 24, the outstanding Official Action indicates that column 7, lines 7-24 of Clark teaches the features of these claims. This portion of Clark describes that the transmission intensities are substantially reversed laterally around their foci if interference such a rib or an air bubble exists in the transmission region. However, this portion of Clark et al. also does not disclose setting a number of simultaneous reception different between long distance and short distance regions as recited in Applicants' independent Claims 6 and 24.

Moreover, Clark's disclosure of simultaneous reception does not disclose setting the scan order among pairs to be opposite to the scan order of scanning lines in each pair as

covered by independent Claims 7 and 25. While the outstanding Official Action also indicates that these claims are disclosed in column 16, lines 17-35 of Clark, this portion of Clark only describes the order of averaging of signals and does not disclose the order of transmission and reception scanning as covered by Claim 7.

Finally, as discussed in the September 25th interview, the cited portions of Clark do not disclose changing a part of the scanning conditions as covered by independent Claim 9.

Thus, the cited reference to Clark does not disclose the limitations of independent Claims 1, 6, 7, 9 and 23-25 suggested by the outstanding Official Action. Moreover, as noted in the September 25 interview, the secondary references to Averkiou et al. and Dayton et al. are cited for teaching different limitations than those described above with respect to Clark. Therefore, these secondary references do not correct the deficiencies of Clark.

For the reasons discussed above, Applicants' independent Claims 1, 6, 7, 9, 23, 24 and 25 patentably define over the cited references. Moreover, as Claims 2-5, 8, and 10-18 depend from Claims 1, 7 and 9 respectively, these claims also patentably define over the cited references.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in

condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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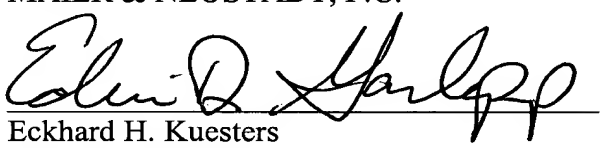

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